

**15.50-16-00**

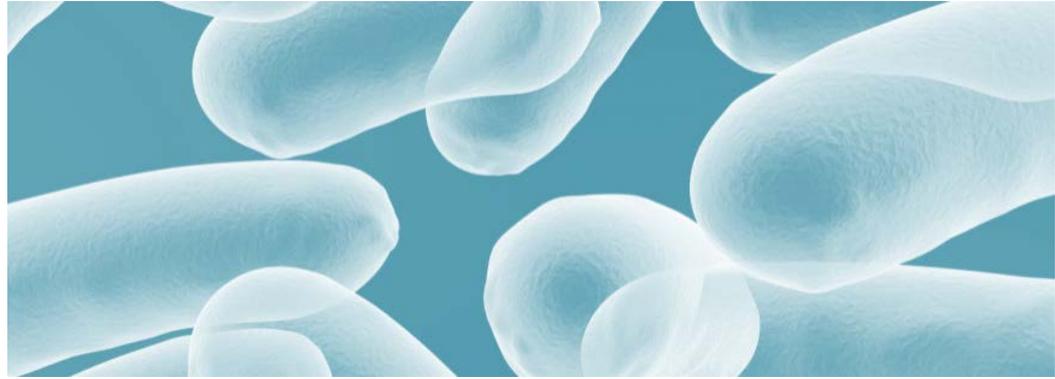
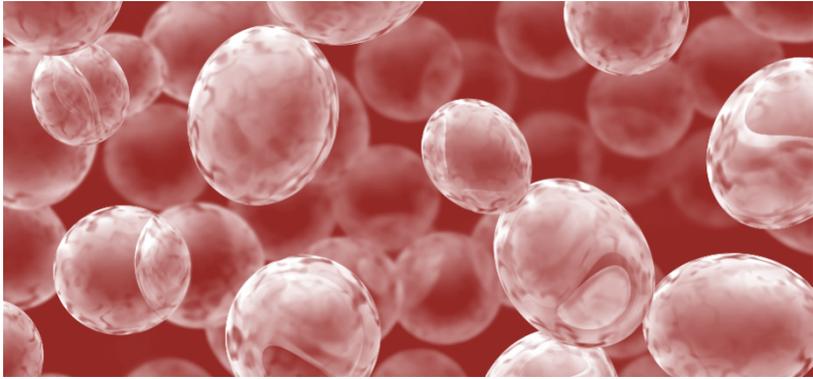
**Simposio ASI**

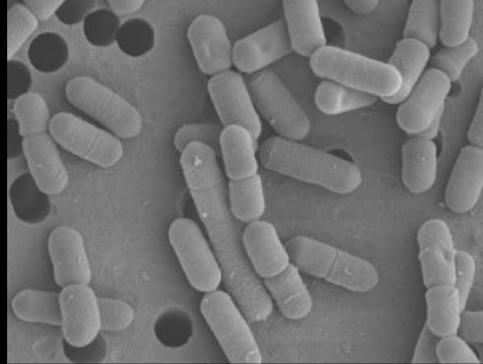
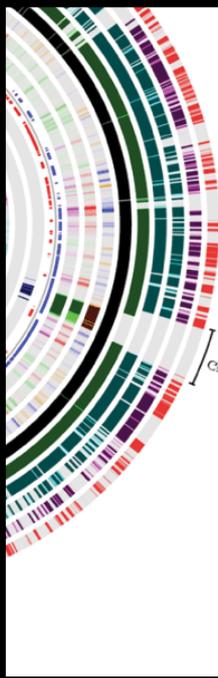
**16.03.2023**

Sessione 3: Nutrizione e tecnologie per la produzione e conservazione di alimenti nello spazio

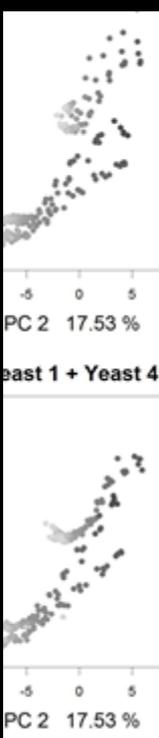
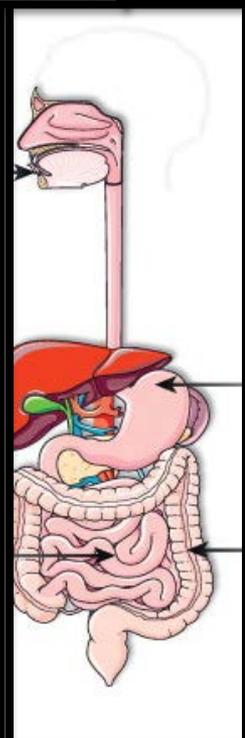
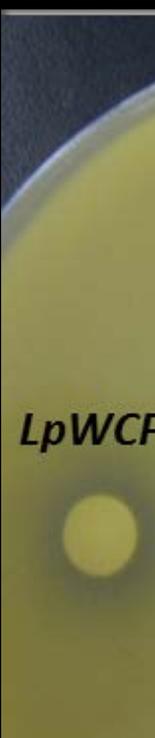
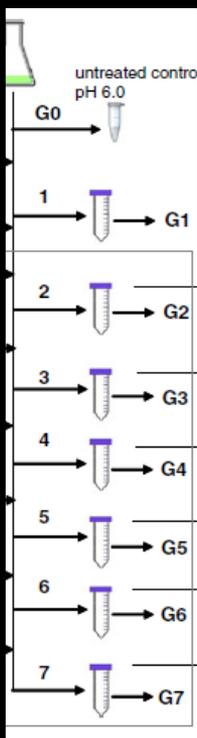
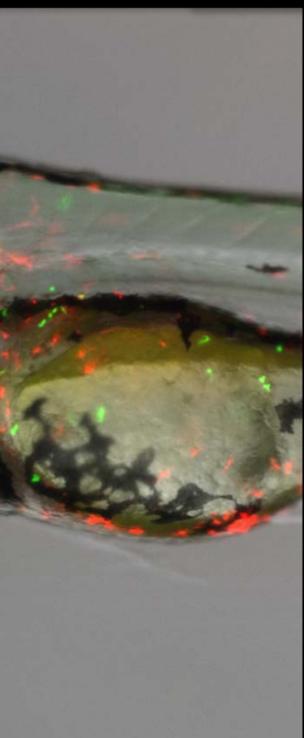
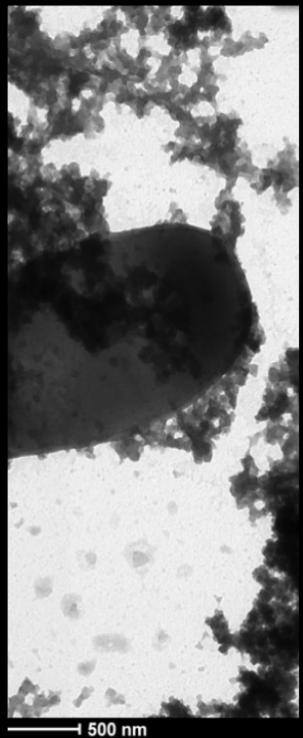
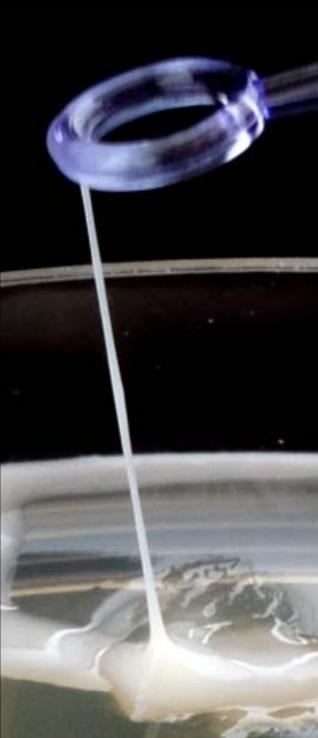
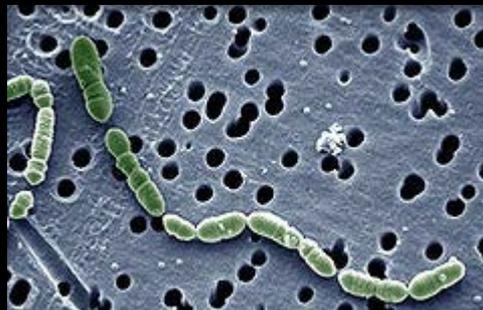
**"Proposta di uno stato dell'arte sullo studio dei processi fermentativi negli alimenti in relazione alle future missioni di esplorazione umana dello spazio"**

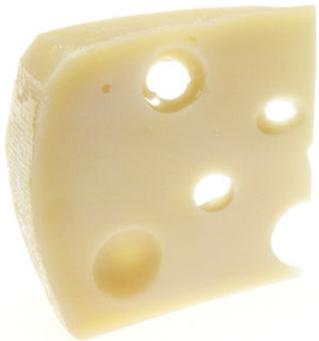
**Vittorio Capozzi, Mariagiovanna Fragasso**

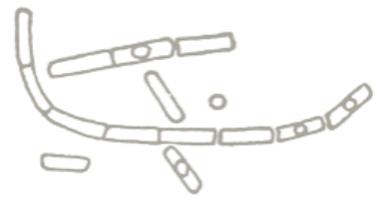
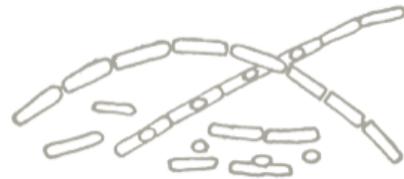




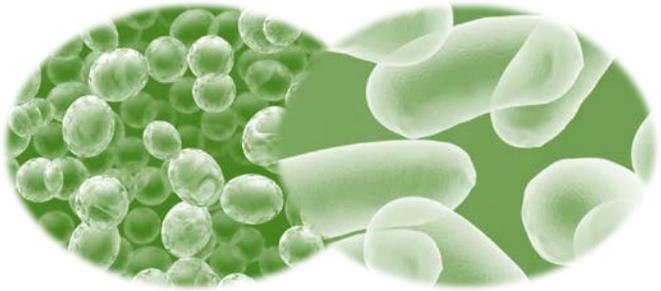
Tyramine  
Histamine  
  
Cadaverine  
  
Putrescine





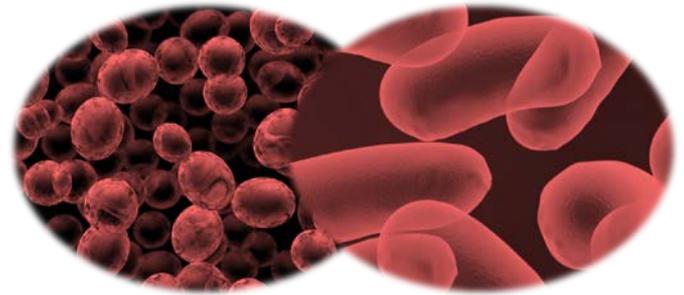


## 'virtuous' microbes



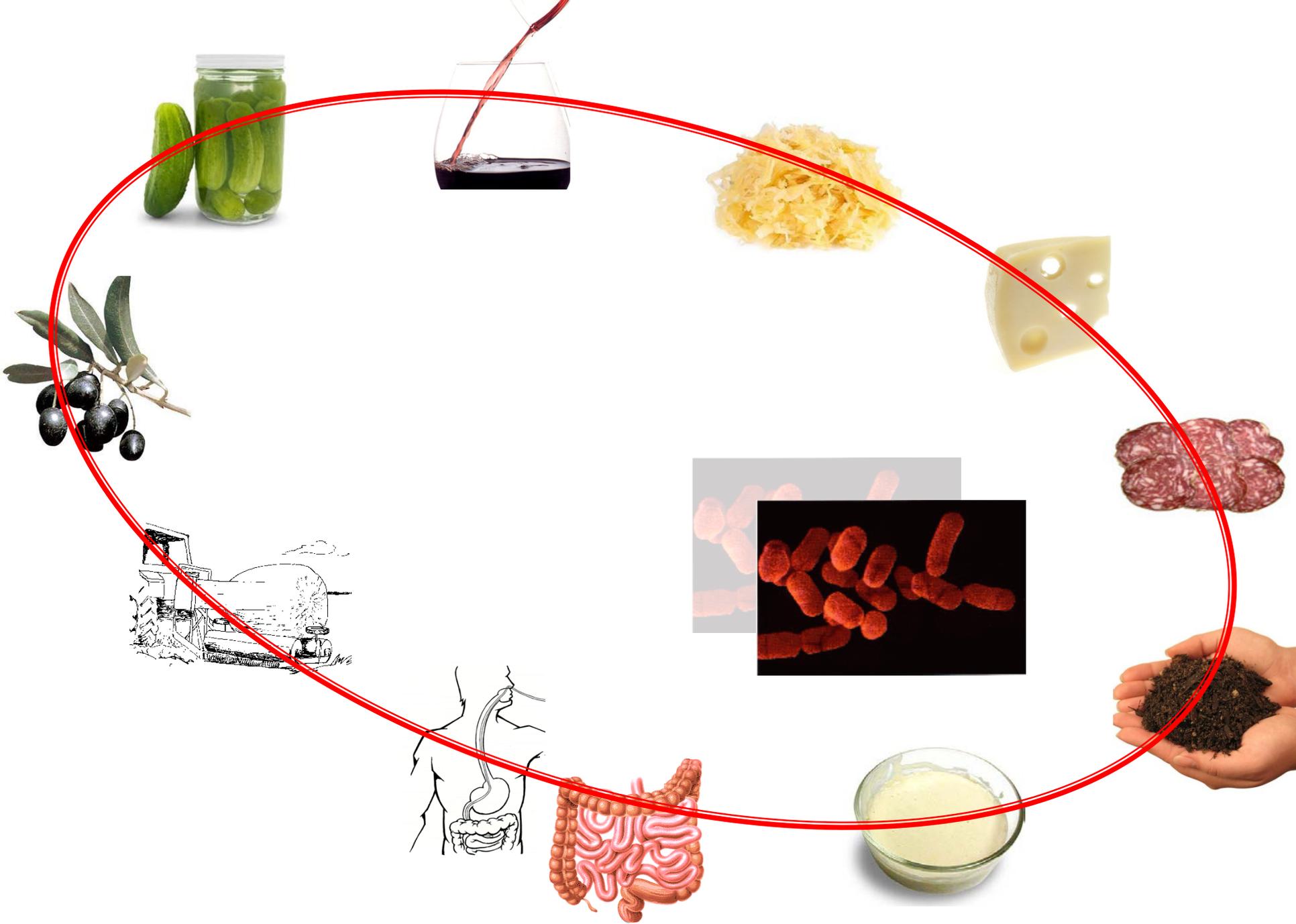
- safe fermentations
  - desired aroma
- nutritional improvement
- probiotic properties

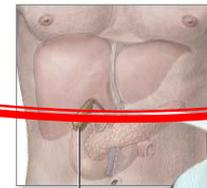
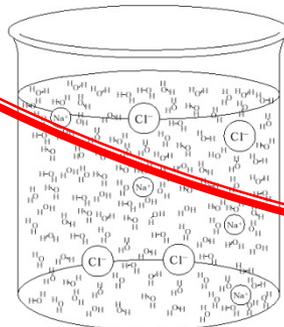
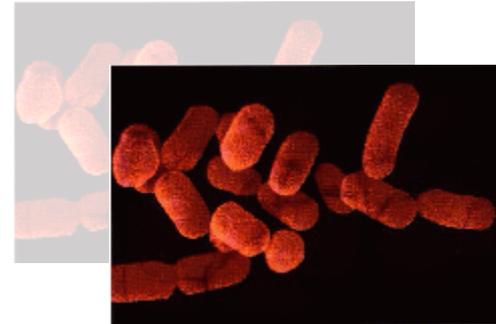
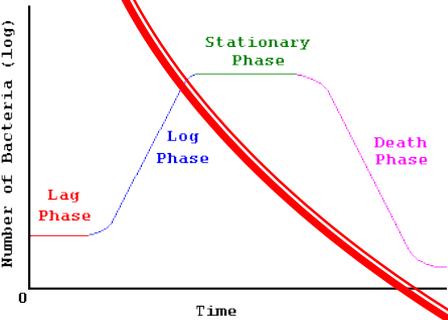
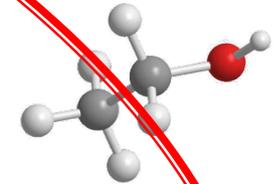
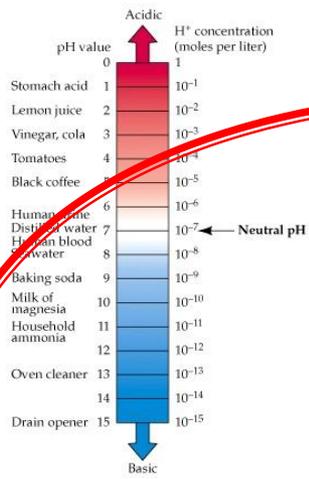
## negative microbes



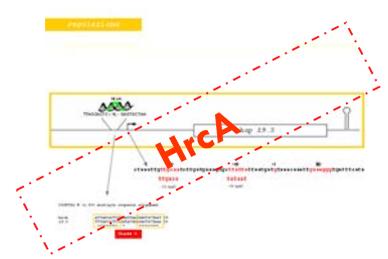
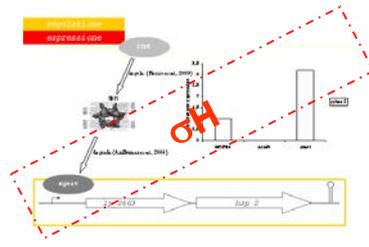
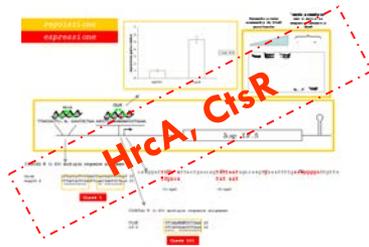
- spoilage phenomena
- off-flavour release
  - pathogens
- toxic compounds



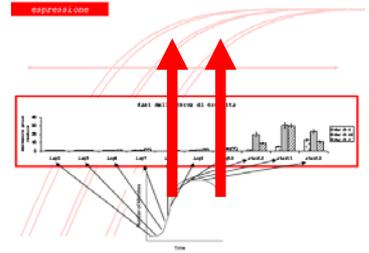
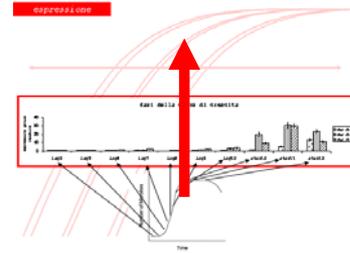
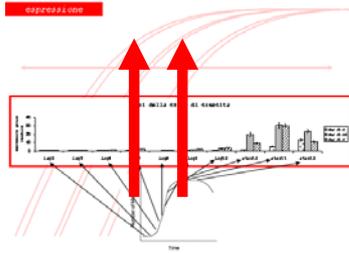




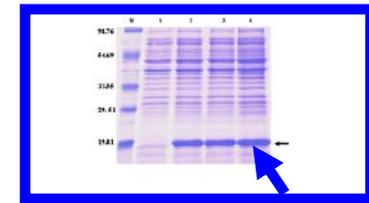
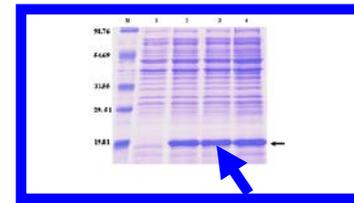
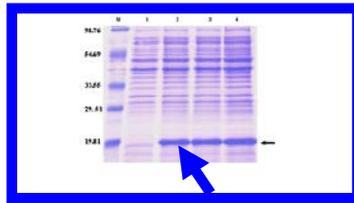
regolazione



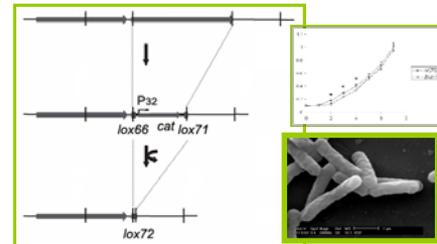
espressione

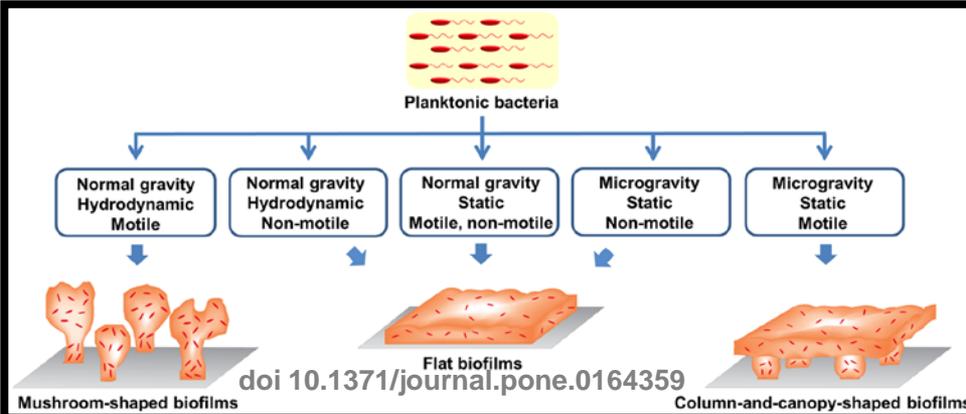


over-  
produzione



delezione





**Human Microbiome in Health**

Commensal bacteria prevents colonization by pathogens

**Altered Human Microbiome in Spacecraft**

Microgravity  
Cosmic radiation  
Discovered microbial diversity  
Pathobiont overgrowth

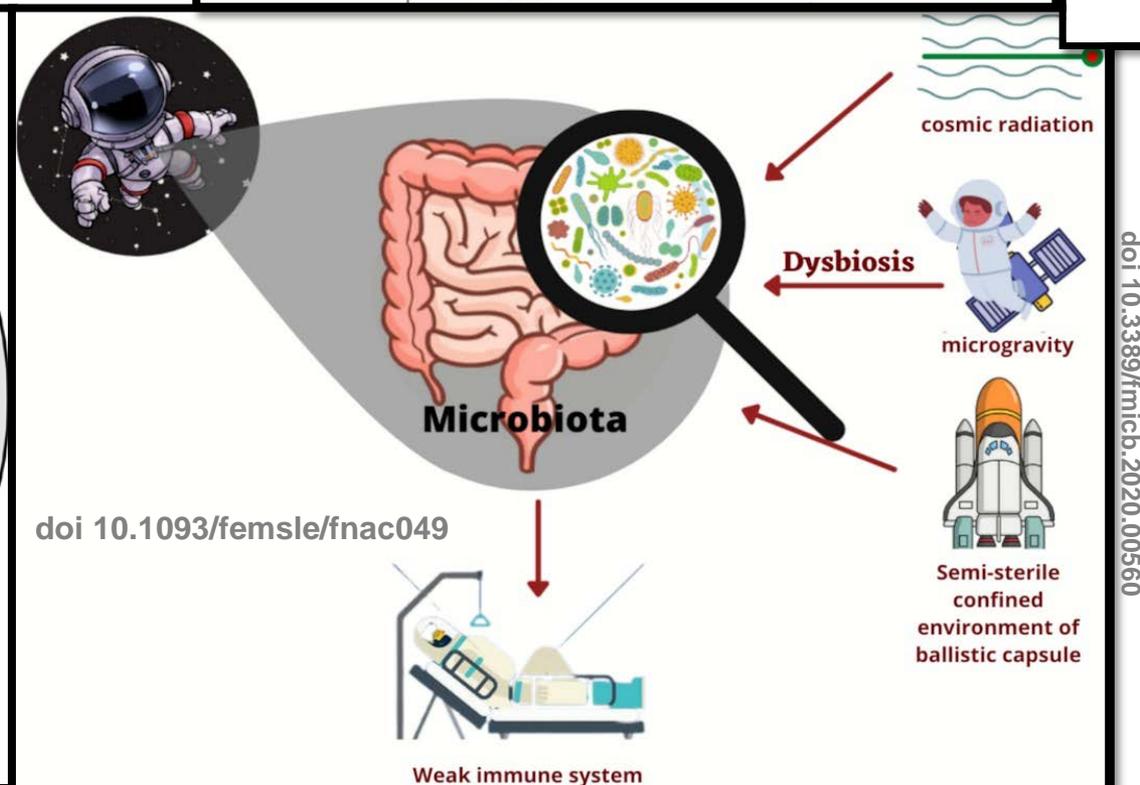
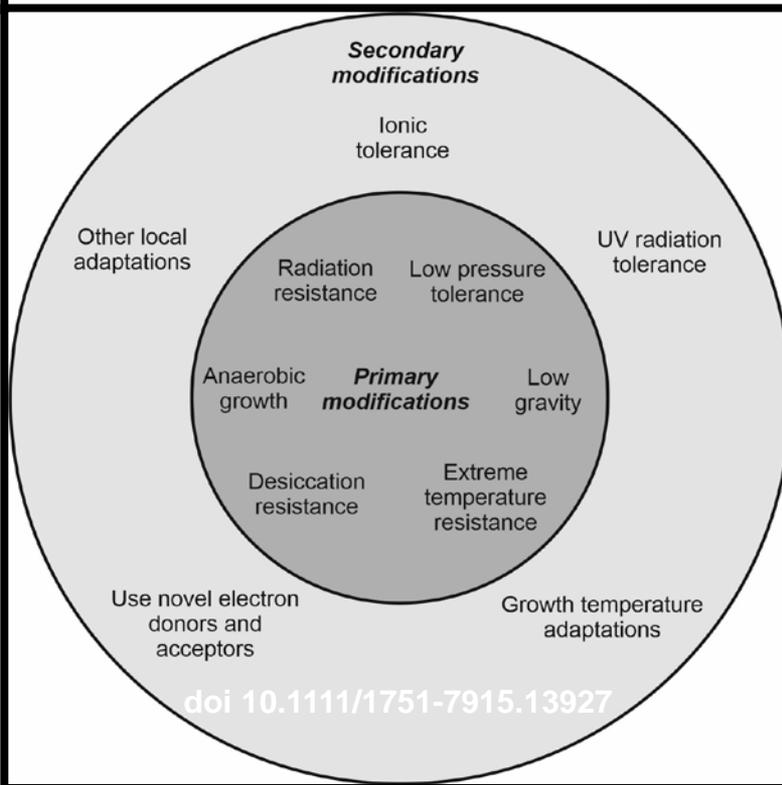
**Probiotic Treatment**

doi 10.1093/femsle/fnac049

↑ IFN- $\beta$  → Macrophage → IL-1, TNF → Lymphocyte → T Cell, B Cell

↓ Phagocytosis, HLA-DR, CD80 → Macrophage, Dendritic Cell → ↓ Phagocytosis, Oxidative burst, chemotaxis → ↓ Activation Response to Ag

**Aspergillus niger Spores Are Highly Resistant to Space Radiation**



doi 10.3389/fmicb.2020.00560

# Fermented Foods as Experimentally Tractable Microbial Ecosystems

Benjamin E. Wolfe<sup>1</sup> and Rachel J. Dutton<sup>2,\*</sup>

<sup>1</sup>Department of Biology, Tufts University, Medford, MA 02155, USA

<sup>2</sup>FAS Center for Systems Biology, Harvard University, Cambridge, MA 02138, USA

\*Correspondence: [rdutton@cgr.harvard.edu](mailto:rdutton@cgr.harvard.edu)

<http://dx.doi.org/10.1016/j.cell.2015.02.034>

Microbial communities of fermented foods have provided humans with tools for preservation and flavor development for thousands of years. These simple, reproducible, accessible, culturable, and easy-to-manipulate systems also provide opportunities for dissecting the mechanisms of microbial community formation. Fermented foods can be valuable models for processes in less tractable microbiota.

doi 10.1016/j.cell.2015.02.034





# COST Action CA20128 – PIMENTO

## Promoting Innovation of ferMENTEd fOods

“The long-term goal of PIMENTO is to place Europe at the spearhead of innovation on microbial foods, promoting health, regional diversity, local production at different scales”  
<https://fermentedfoods.eu/>



**WG1 - Build a multi-actor operational network**



**WG2 - Cartography of Fermented Foods in the diet of COST Countries**



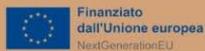
**WG3 - Health benefits and risks of fermented foods**



**WG4 - Federating scientists and Fermented Food producers to boost innovation for society**



**WG5 - Dissemination, training & events**



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**ON FOODS**

**Research and innovation network on Food and Nutrition Sustainability, Safety and Security**

<https://www.foodproject.unipr.it/it/progetti-pnrr/173/>



<https://www.agritechacademy.unina.it/>



**T. HANKS**

**vittorio.capozzi@ispa.cnr.it**

**mariagiovanna.fragasso@unifg.it**